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DATE: March 14, 2001
TO: Paul Baker-DOGM
FAX: (801) 359-3940
FROM: Tom Paluso
SUBJECT: Lila March 8, 2001 TA Response

2/20/03
[Redacted]
[Redacted]
Copy Paul

NUMBER OF PAGES INCLUDING COVER SHEET: 21

I am submitting information concern the above mentioned TA for your approval. This is an attempt to eliminate any problems and need for any additional submittals. Dave Darby and I feel that this would be a good idea. We all need this to be UEI's last submittal before approval.

Attached is the vegetation information that we talked about the other day. This information would be inserted after Kaiser Steel's Vegetation Study South Lease. I did not fax you a complete Figure One.

I hope this is what you wanted. Please let me know if you have any concerns or questions.

Lila Canyon

Vegetation Inventory

Prepared for:

UtahAmerican Energy, Incorporated
(UEI)
P.O. Box 986
Price, UT 84501



Shrubs and Grass



Pinyon and Juniper

Prepared by:
Environmental Industrial Services
31 North Main
Helper, UT 84526

October 1, 1998⁹

Appendix 3-2

**Lila Canyon Vegetation Survey
November 28, 2000**

**ATTACHMENT 3-2
LILA CANYON VEG SURVEY**

UTAH AMERICAN ENERGY INC.

**LILA CANYON MINE SITE
VEGETATION GROUND COVER**

**CONDUCTED
NOVEMBER 28, 2000**

**BY
EIS
ENVIRONMENTAL ENGINEERING
AND
CONSULTING**

**31 NORTH MAIN STREET
HELPER, UTAH 84526
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Introduction

This report contains the percent vegetation cover inventory for pinyon- juniper stand located in the Lila Canyon mine site. The pinyon- juniper stand had minimal snow on the ground. At that time most plants still displayed evidences that they were viable. Of course all Pinyon- Juniper trees were green, as well as most of the shrubs. The grasses and forbes were not as easy to ascertain whether they were live plants in a state of dormancy or plant litter. A judgment call based on appearance of plant was made to determine if it was viable or not. No data was taken regarding the litter, rock, and bare ground as that the goal was to determined percent of vegetative cover and not total percent ground cover. The inventory was conducted by Melvin Coonrod and David Varner on November 28, 2000.

Methodology

Information acquired was recorded onto inventory field data sheets (See Attachment 1). Sampling of vegetation was accomplished by using ocular estimation approved by Division of Oil, Gas, and Mining Vegetation Information Guidelines (February 1992).

An estimate of the percent of vegetative ground cover was obtained by randomly selecting points throughout the pinyon- juniper stand and assessing the vegetation within a eleven foot nine inch radius. This makes each site 1/100 of an acre. Vegetation cover was then identified by species at each individual site (See Attachment 1).

Findings

The area supports relatively simple plant communities with a few conspicuous dominant vegetation types. The pinyon- juniper area of disturbance is comprised of sparsely associated species of all vegetation life forms including trees, shrubs, grasses, and forbes. Species composition of the shrub communities consisted predominantly of winterfat (*Ceratoides lanata*) and fourwing saltbush (*Atriplex canescens*). The limited dispersal of grass and forbes species included Salina wild rye (*Elymus salinus*), galleta (*Hilaria jamesii*), golden cryptantha (*Cryptantha flava*), and snakeweed (*Xanthocephalum sarothrae*). For a complete listing of present species found in each quadrat (See Attachment 2).

An estimate was made for each species found in each individual site then total together to arrive at a total percent ground cover for each site (See Attachment 1). The total for each was used to achieve an average for the entire pinyon- juniper stand. It was determined that the pinyon- juniper stand had an average of 33 percent vegetation cover. In comparison the reference area is one acre² and maintains 44.8 percent vegetative cover and the Pinyon- Juniper area actually surveyed was one tenth in size and contained 33 percent vegetative cover. Field sheets are attached that show location, species, and estimated ground cover (see Attachment 2).

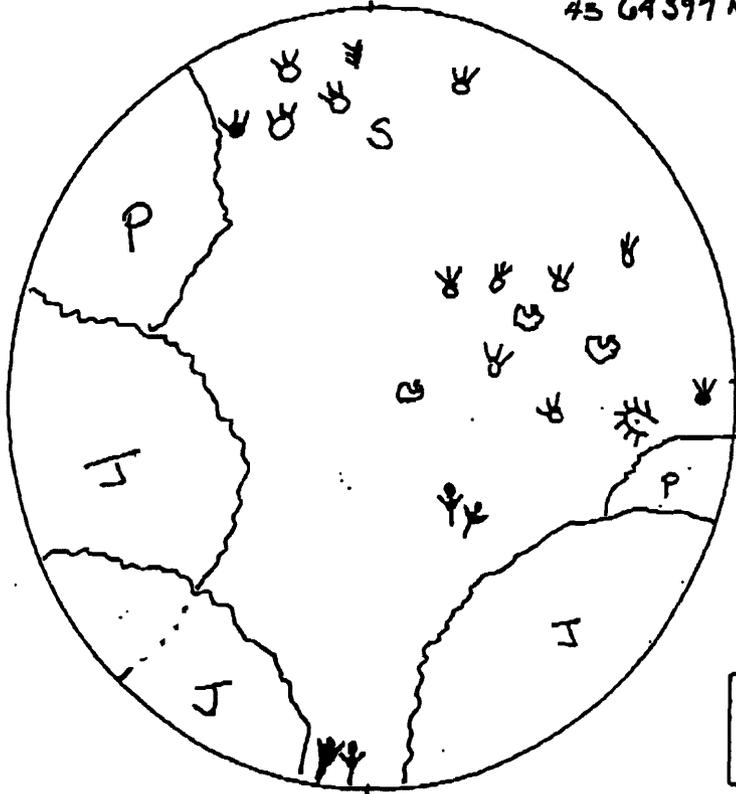
**ATTACHMENT 1
PERCENT GROUND COVER
BY
SPECIES**

**ATTACHMENT 2
FIELD SHEETS**

Plot# Lila Canyon PJ Date 11/23/00

Sampler M.A.C. ; D.U.

Site 1# 12 555650 E
43 64397 N



22

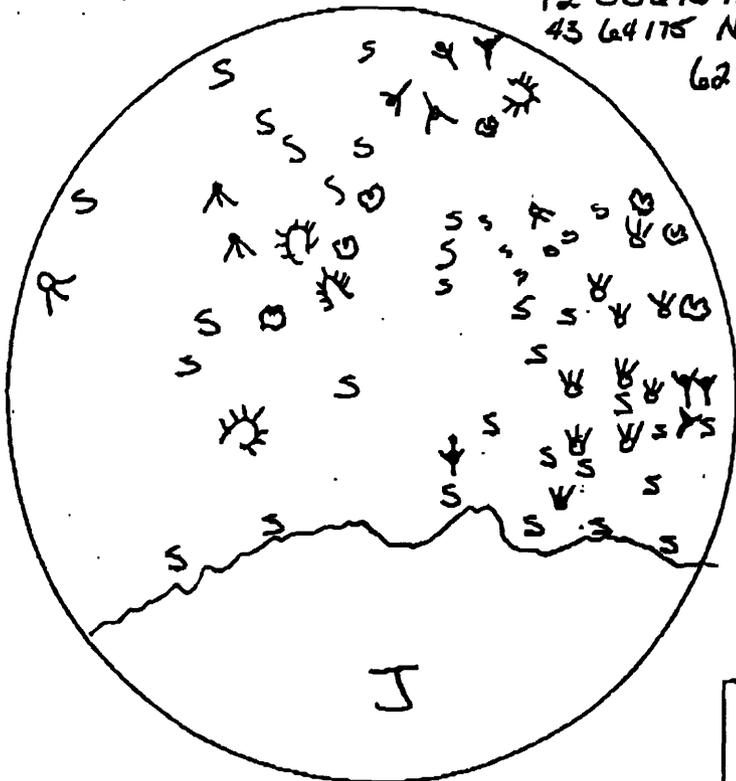
% Veg Cover

Species

<1%	1 galetta Y	9 p. pear Y
<5%	2 phlox S	10 I. ricinus (TR)
<5%	3 cryptantha V	11 Broadleaf Y
<5%	4 S.W. Rye Y	12 winterfat (SWP)
	5 P. Gila Y	13 flowering 4W
<5%	6 S. WEED S	14 s. phlox Y
16%	7 Juniper J	15
2%	8 Pinyon P	16

Site 2#

12 556139 E
43 64175 N
6293' Elevation



27

% Veg Cover

Species

1	Juniper 25%	9
2	snakeweed 5%	10
3	galetta 4%	11
4	p. pear 2%	12
5	swage 15%	13
6	phlox 1.5%	14
7		15
8		16

Plot# 3

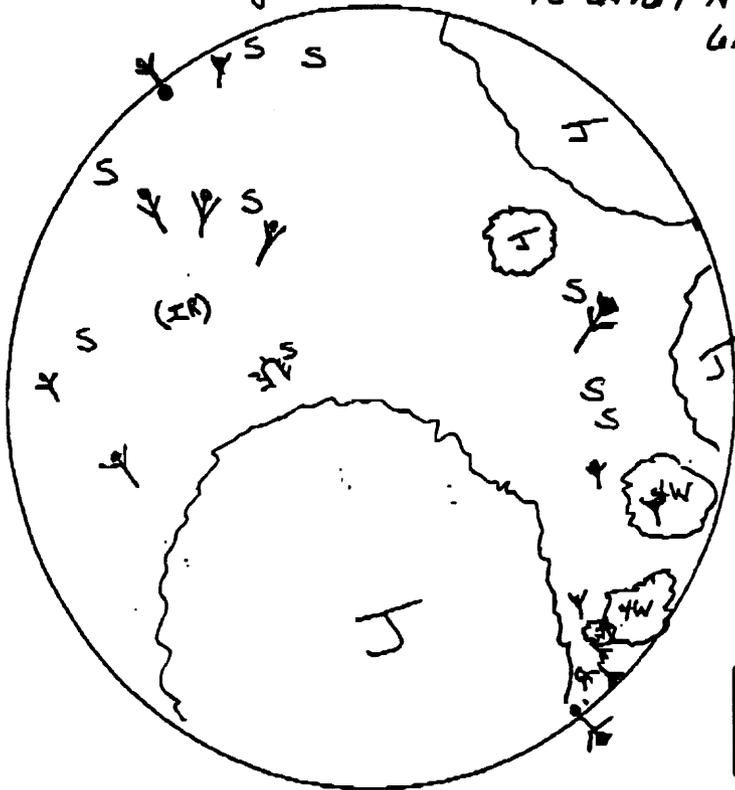
Date 11/26/00

Sampler MEL, Dave

Site Kila Canyon

12 556119E
43 64167 N

6112' Elev



Species

1	Juniper 24%	9
2	W 4%	10
3	S.W. Ryg 1.5%	11
4	I.R. P...	12
5		13
6		14
7		15
8		16

Site 4*

12 556163E

43 64155 N

6009' Elev



Species

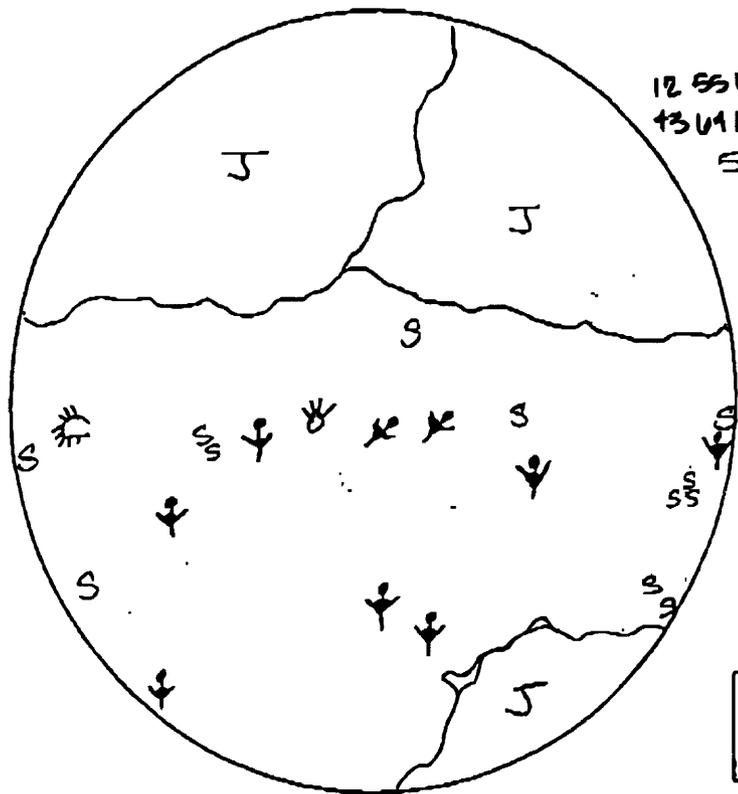
1	Juniper 8%	9
2	S.W. Ryg 12%	10
3	Green Ephedra 1%	11
4	galletta	12
5	P. Pear 3%	13
6	Snakehead	14
7		15
8		16

Plot# Lila Canyon PJ

Date 11/28/2000

Sampler M.A.C. & D.V

Site #5



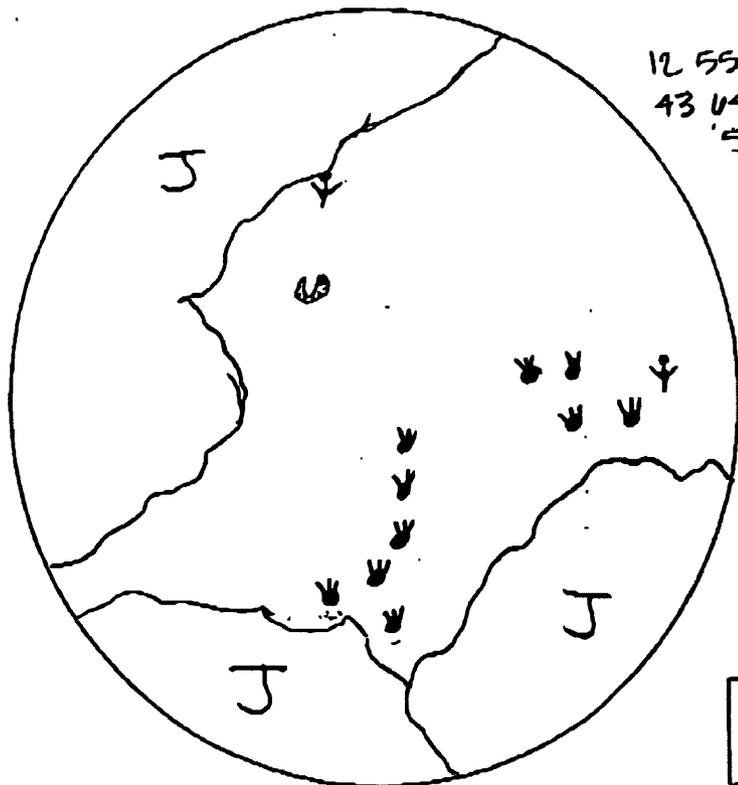
12 550212 E
1304187 N
5902' ELEV.

Species

38%	1 JUNIPER J	9
<1%	2 S WOOD S	10
4%	3 S.W. RYE ♀	11
<1%	4 PEAR ♂	12
<1%	5 GALETA ♂	13
	6	14
	7	15
	8	16

43 % Veg Cover

Site #6



12 550172 E
43 04179 N
5917' ELEV.

Species

40%	1 JUNIPER J	9
1%	2 CRYPTANTHA W	10
<1%	3 PHLOX ♂	11
<1%	4 S.W. RYE ♀	12
	5	13
	6	14
	7	15
	8	16

42 % Veg Cover

Plot# Lila Canyon PJ Date 11/27/00

Sampler D.U. ; MAC

Site 7 #

12 556209E
43 64225N
5967' Elev



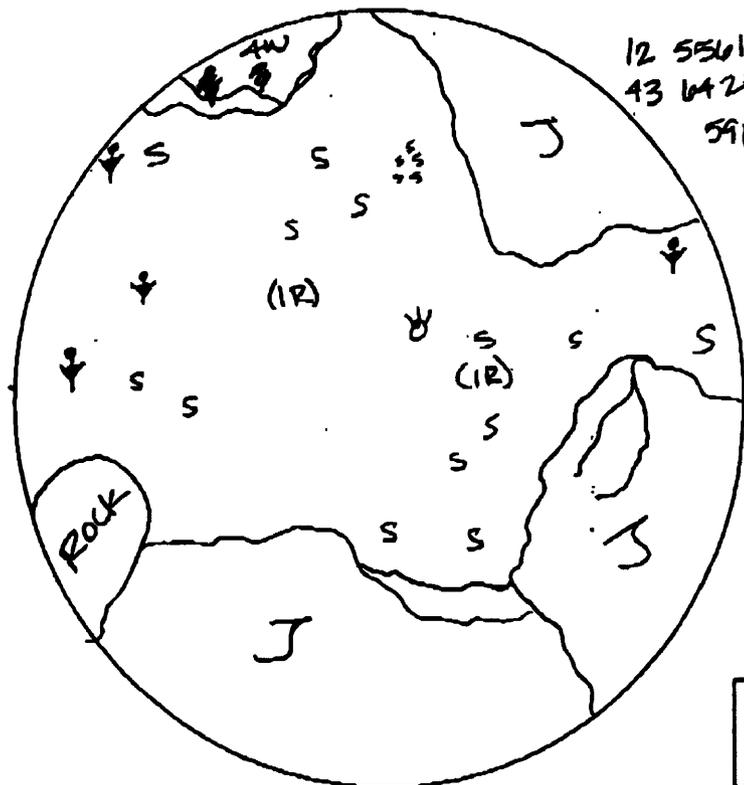
Species

1 Juniper 50%	9
2 S.W. Rye 5%	10
3 fourwing 4%	11
4 snakeweed 17%	12
5 p.gila	13
6	14
7	15
8	16

59.5 % Veg Cover

Site 8 #

12 556199 E.
43 64238 N.
5964' elev.



Species

1 JUNIPER 32%	9
2 4WINGS 2%	10
3 IR GRASS	11
4 GALETIA	12
5 SWEED 1%	13
6 S.W. RYE	14
7	15
8	16

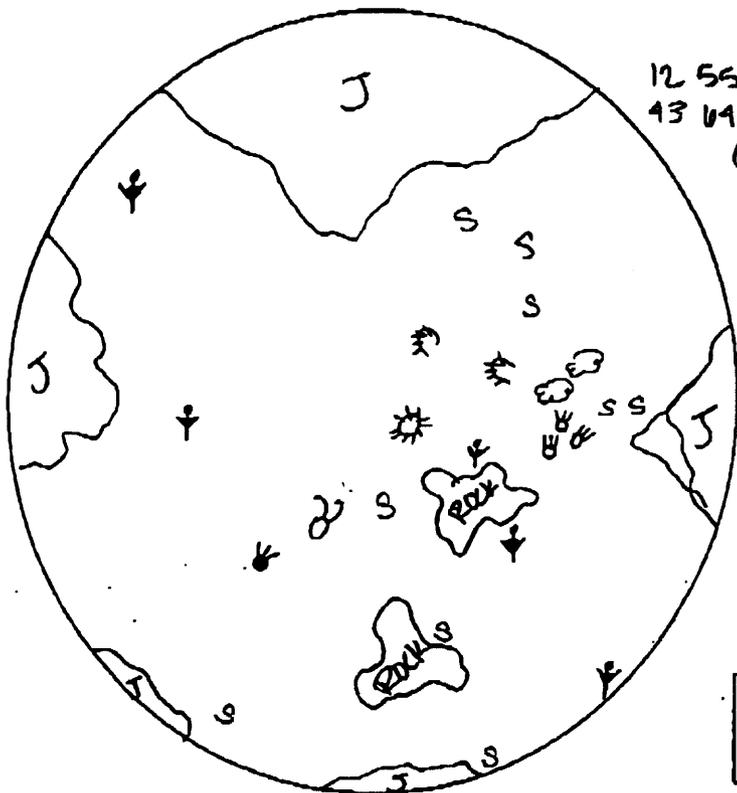
55 % Veg Cover

Plot # 1/1a Canyon PS

Date Nov 28, 2000

Sampler M.A.C. & DV

Site #9



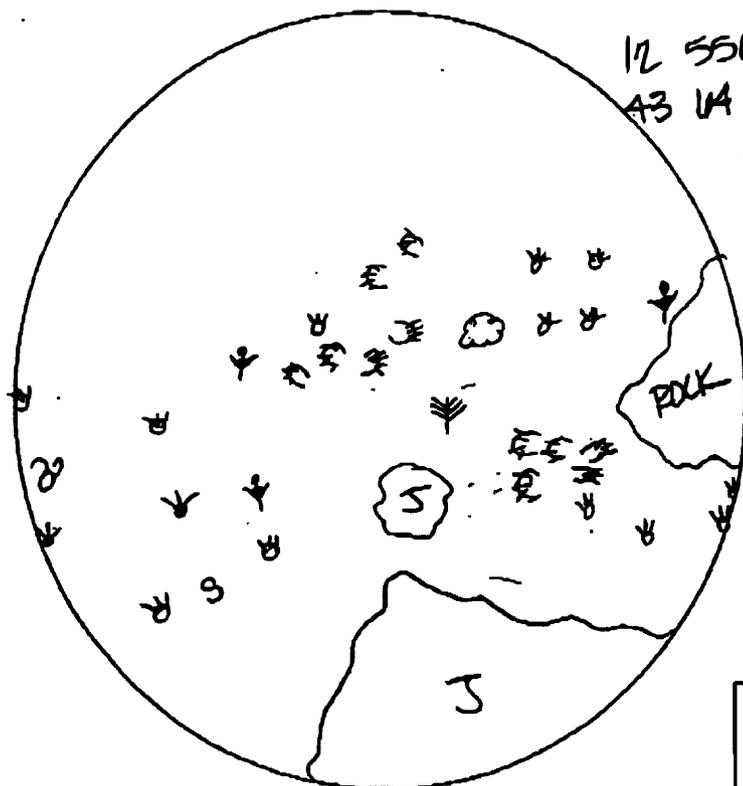
12 556138 E
43 04242 N
(5947 ELEV.)

Species

12	JUNIPER J	9
<1%	S.W. NEED S	10
<1%	SCRYPHANTHA W	11
<1%	S.W. RYE Y	12
1%	S.P. PEAR P	13
<1%	WINTERFAT W	14
<1%	GALLETA H	15
<1%	SPARRELL C. S	16

15 % Veg Cover

Site #10



12 556100 E
43 04239 N
(5940 FT) ELEV.

Species

6%	1 JUNIPER J	9
4%	2 P. PEAR P	10
.5%	3 WINTERFAT W	11
<.5%	4 S.W. RYE Y	12
<.5%	5 GALLETA H	13
<.5%	6 SCRYPHANTHA W	14
<.5%	7 P. GILA G	15
<.5%	8	16

12 % Veg Cover

Introduction

Lila Canyon, located in Emery County, was surveyed November 1st through the 11th, 1999. The purpose was to establish a vegetation inventory for a proposed coal mine for UtahAmerican Energy, Incorporated. Mr. Melvin A. Coonrod, Mr. Ken Salt, and George Cook from Environmental Industrial Services (EIS) conducted the survey.

Methodology

The area of potential disturbance was mapped relative to vegetation communities and a numbered grid was laid over the potential disturbed area.

Sampling of vegetation was accomplished by surveying 15 transects for each area, with transects spanning 100'. A table of random numbers arbitrarily determined the placement in the grid and direction of each transect. Every 10', a 2.5' x 2.5' iron rod with 10 random points was placed on alternating sides of the tape, determining the point of each sample. A total of 1,500 points were taken for each vegetation type. (15 Transects)

To establish revegetation success standards, a reference area correlating with brush and grass vegetation types was surveyed. A reference area measuring 330' x 330' (1acre²) was laid out. Transects were conducted using the same methodology as the disturbed areas. (See Figure 1 Map, for location of transects and reference areas).

The Pinyon Juniper vegetation community was sampled to determine woody plant density using a circular plot with an 11'9" radius (1/100 of an acre) centered at the beginning of each transect. All woody plants within the circumference were counted. A total of 15 plots were conducted for each area.

The reference area was selected with a similar slope, aspect and like soil characteristics.

Findings

Lila Canyon consists of two main vegetation types. Shrubs and grasses cover approximately 20 acres of the lower boundary, while Pinyon and Juniper occupy the remaining 20 acres at higher elevations (see attached cover).

The surrounding vegetation is composed of similar zones, but with the addition of several wide, shallow drainage areas inhabited mainly by Salina Wild Rye (Elymus salinus), Tamarisk (Tamarix pentandra), Greasewood (Sarcobatus vermiculatus), and Rabbitbrush (Chrysothamnus nauseosus). Shadscale (Atriplex confertifolia), was also associated with these areas, but not identified in the surveyed locations. No threatened or endangered species were identified within the permit or surrounding areas.

Species composition of the shrub and grass areas consist predominantly of Cheat Grass (Bromus

tectorum), Rabbitbrush (Chrysothamnus viscidiflorus), and Lichen. Salina Wild Rye (Elymus salinus) and Indian Rice Grass (Oryzopsis hymenoides) also commonly occur over the survey area. Bare ground, rock and vegetation litter account for 55.2% of total ground cover in the reference area.

While Utah Juniper and Pinyon Pine identify the second vegetation type, Salina Wild Rye (Elymus salinus), Lichen and Rabbitbrush (Chrysothamnus viscidiflorus) attribute the highest yield to species composition. Bare ground, rock, and vegetative litter occupy 72.4% of total ground cover in the Pinyon/Juniper area. For a complete list of species identified, refer to Table 1.

Sample adequacy was demonstrated for ground cover, and density for both the proposed disturbed site and the reference area as suggested by the Vegetation Information Guidelines (1992). (See Tables 1 & 2).

Species composition similarity was demonstrated by using "Jaccard's Community Coefficient." The Jaccard's Community Coefficient for the proposed disturbed area compared to the reference area was 89%, which is higher than the 70% recommended in the Vegetation Information Guidelines (1992). See FIGURE 1.

Ground cover and woody plant density similarity was demonstrated by the use of a double "t" with a confidence interval of 90% as suggested by the Vegetation Information Guidelines (1992). Both the ground cover and wood plant density fell well within the 90% confidence interval. See FIGURE 2.

In all data sets, this survey exceeded the requirement that at least a 70% probability was achieved. In addition, all confidence levels were greater than 90%.

The Pinyon/Juniper study area as well as the Pinyon/Juniper reference area were deleted from the study after consultation with the BLM, Mr. David Mills, and DOGM Mr. Paul Baker. The consensus of all concerned agencies and individuals was that Pinyon/Juniper was not a desirable vegetation community to reestablish in a critical high value range for elk, deer and potentially Rocky Mountain Bighorn sheep. Within the Price River Resource Area Pinyon/Juniper comprise approximately 200,000 acres, occupying approximately 18% of the land area. This vegetation community is not deemed high value use for forage by big game species. The post mining land use is wildlife and grazing. The grass shrub community is far more desirable end community for this purpose.

TABLE 1

Lisa Vegetation Inventory
GRASS / SHRUB

Common Name Desirable Species	Mine Site Area Transect Number													31°	34°	35°	37°	39°	41°	43°	45°	47°	49°	51°	53°	55°	57°	59°	61°	63°	65°	67°	69°	71°	73°	75°	77°	79°	81°	83°	85°	87°	89°	91°	93°	95°	97°	99°	101°	103°	105°	107°	109°	111°	113°	115°	117°	119°	121°	123°	125°	127°	129°	131°	133°	135°	137°	139°	141°	143°	145°	147°	149°	151°	153°	155°	157°	159°	161°	163°	165°	167°	169°	171°	173°	175°	177°	179°	181°	183°	185°	187°	189°	191°	193°	195°	197°	199°	201°	203°	205°	207°	209°	211°	213°	215°	217°	219°	221°	223°	225°	227°	229°	231°	233°	235°	237°	239°	241°	243°	245°	247°	249°	251°	253°	255°	257°	259°	261°	263°	265°	267°	269°	271°	273°	275°	277°	279°	281°	283°	285°	287°	289°	291°	293°	295°	297°	299°	301°	303°	305°	307°	309°	311°	313°	315°	317°	319°	321°	323°	325°	327°	329°	331°	333°	335°	337°	339°	341°	343°	345°	347°	349°	351°	353°	355°	357°	359°	361°	363°	365°	367°	369°	371°	373°	375°	377°	379°	381°	383°	385°	387°	389°	391°	393°	395°	397°	399°	401°	403°	405°	407°	409°	411°	413°	415°	417°	419°	421°	423°	425°	427°	429°	431°	433°	435°	437°	439°	441°	443°	445°	447°	449°	451°	453°	455°	457°	459°	461°	463°	465°	467°	469°	471°	473°	475°	477°	479°	481°	483°	485°	487°	489°	491°	493°	495°	497°	499°	501°	503°	505°	507°	509°	511°	513°	515°	517°	519°	521°	523°	525°	527°	529°	531°	533°	535°	537°	539°	541°	543°	545°	547°	549°	551°	553°	555°	557°	559°	561°	563°	565°	567°	569°	571°	573°	575°	577°	579°	581°	583°	585°	587°	589°	591°	593°	595°	597°	599°	601°	603°	605°	607°	609°	611°	613°	615°	617°	619°	621°	623°	625°	627°	629°	631°	633°	635°	637°	639°	641°	643°	645°	647°	649°	651°	653°	655°	657°	659°	661°	663°	665°	667°	669°	671°	673°	675°	677°	679°	681°	683°	685°	687°	689°	691°	693°	695°	697°	699°	701°	703°	705°	707°	709°	711°	713°	715°	717°	719°	721°	723°	725°	727°	729°	731°	733°	735°	737°	739°	741°	743°	745°	747°	749°	751°	753°	755°	757°	759°	761°	763°	765°	767°	769°	771°	773°	775°	777°	779°	781°	783°	785°	787°	789°	791°	793°	795°	797°	799°	801°	803°	805°	807°	809°	811°	813°	815°	817°	819°	821°	823°	825°	827°	829°	831°	833°	835°	837°	839°	841°	843°	845°	847°	849°	851°	853°	855°	857°	859°	861°	863°	865°	867°	869°	871°	873°	875°	877°	879°	881°	883°	885°	887°	889°	891°	893°	895°	897°	899°	901°	903°	905°	907°	909°	911°	913°	915°	917°	919°	921°	923°	925°	927°	929°	931°	933°	935°	937°	939°	941°	943°	945°	947°	949°	951°	953°	955°	957°	959°	961°	963°	965°	967°	969°	971°	973°	975°	977°	979°	981°	983°	985°	987°	989°	991°	993°	995°	997°	999°	1001°	1003°	1005°	1007°	1009°	1011°	1013°	1015°	1017°	1019°	1021°	1023°	1025°	1027°	1029°	1031°	1033°	1035°	1037°	1039°	1041°	1043°	1045°	1047°	1049°	1051°	1053°	1055°	1057°	1059°	1061°	1063°	1065°	1067°	1069°	1071°	1073°	1075°	1077°	1079°	1081°	1083°	1085°	1087°	1089°	1091°	1093°	1095°	1097°	1099°	1101°	1103°	1105°	1107°	1109°	1111°	1113°	1115°	1117°	1119°	1121°	1123°	1125°	1127°	1129°	1131°	1133°	1135°	1137°	1139°	1141°	1143°	1145°	1147°	1149°	1151°	1153°	1155°	1157°	1159°	1161°	1163°	1165°	1167°	1169°	1171°	1173°	1175°	1177°	1179°	1181°	1183°	1185°	1187°	1189°	1191°	1193°	1195°	1197°	1199°	1201°	1203°	1205°	1207°	1209°	1211°	1213°	1215°	1217°	1219°	1221°	1223°	1225°	1227°	1229°	1231°	1233°	1235°	1237°	1239°	1241°	1243°	1245°	1247°	1249°	1251°	1253°	1255°	1257°	1259°	1261°	1263°	1265°	1267°	1269°	1271°	1273°	1275°	1277°	1279°	1281°	1283°	1285°	1287°	1289°	1291°	1293°	1295°	1297°	1299°	1301°	1303°	1305°	1307°	1309°	1311°	1313°	1315°	1317°	1319°	1321°	1323°	1325°	1327°	1329°	1331°	1333°	1335°	1337°	1339°	1341°	1343°	1345°	1347°	1349°	1351°	1353°	1355°	1357°	1359°	1361°	1363°	1365°	1367°	1369°	1371°	1373°	1375°	1377°	1379°	1381°	1383°	1385°	1387°	1389°	1391°	1393°	1395°	1397°	1399°	1401°	1403°	1405°	1407°	1409°	1411°	1413°	1415°	1417°	1419°	1421°	1423°	1425°	1427°	1429°	1431°	1433°	1435°	1437°	1439°	1441°	1443°	1445°	1447°	1449°	1451°	1453°	1455°	1457°	1459°	1461°	1463°	1465°	1467°	1469°	1471°	1473°	1475°	1477°	1479°	1481°	1483°	1485°	1487°	1489°	1491°	1493°	1495°	1497°	1499°	1501°	1503°	1505°	1507°	1509°	1511°	1513°	1515°	1517°	1519°	1521°	1523°	1525°	1527°	1529°	1531°	1533°	1535°	1537°	1539°	1541°	1543°	1545°	1547°	1549°	1551°	1553°	1555°	1557°	1559°	1561°	1563°	1565°	1567°	1569°	1571°	1573°	1575°	1577°	1579°	1581°	1583°	1585°	1587°	1589°	1591°	1593°	1595°	1597°	1599°	1601°	1603°	1605°	1607°	1609°	1611°	1613°	1615°	1617°	1619°	1621°	1623°	1625°	1627°	1629°	1631°	1633°	1635°	1637°	1639°	1641°	1643°	1645°	1647°	1649°	1651°	1653°	1655°	1657°	1659°	1661°	1663°	1665°	1667°	1669°	1671°	1673°	1675°	1677°	1679°	1681°	1683°	1685°	1687°	1689°	1691°	1693°	1695°	1697°	1699°	1701°	1703°	1705°	1707°	1709°	1711°	1713°	1715°	1717°	1719°	1721°	1723°	1725°	1727°	1729°	1731°	1733°	1735°	1737°	1739°	1741°	1743°	1745°	1747°	1749°	1751°	1753°	1755°	1757°	1759°	1761°	1763°	1765°	1767°	1769°	1771°	1773°	1775°	1777°	1779°	1781°	1783°	1785°	1787°	1789°	1791°	1793°	1795°	1797°	1799°	1801°	1803°	1805°	1807°	1809°	1811°	1813°	1815°	1817°	1819°	1821°	1823°
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**Woody Plant Density
Total Area (Grass Shrub Disturbed & Reference and PJ)**

	Transect Number															
	6	7	8	9	10	11	12	13	14	15	TOTAL					
Utah juniper			2			1	1	4	5	6	22					
piñon pine						2	1		1	2	6					
prickly gill							46	3			49					
shadscale									3	1	11					
four-wing salt bush	4	1									32					
winterfat	1	5		1	1			1			18					
gray rabbitbrush					1						1					
Douglas rabbitbrush					1						11					
greasewood											3					
green sphaera					1						2					
yucca sp.									1		1					
snakeweed	78	54	94	50	65						594					
Wyoming big sage	1										1					
TOTAL Woody Plant	21	105	59	36	92	84	60	96	51	69	3	48	8	10	9	751
Avg. Wood Plant/Ac.																5006.7
Desirable / Ac																1046.7
Grass Shrub Dist.																
Grass Shrub Refer						7200 stems / acre										
PJ Disturbed												1560 stems / acre				

Jaccard's Community Coefficient:

$$Si = c/(a+b-c)*100$$

Where:

- Si= Similarity index;
a= Total number of species in the reference area;
b= Total number of species in mine site area;
c= Number of species common to both communities.
Si values can run from 1 to 100 with 1 being not similar at all and 100 being very similar.

a	b	c
17	17	16

Si = 89 making the sites very similar

The 89% Si exceeds DOGM requirements of 70%.

Two Tailed "T"

When the population is normally distributed but the variance and the mean of the population is unknown the two tailed "t" test is used. The "t" distribution is used in place of the normal distribution "z". As the sample number (n) increases the "t" distribution approaches the normal (z) distribution. The vegetation guidelines used by DOGM (Revised, February 1992) suggests that the reference areas and proposed disturbed areas should be equal with a 90% confidence using the two tailed "t" test. Woody Plant Density and % cover are to be compared. Calculations for the double "t" test follows:

<u>Mine Area</u>	<u>Reference Area</u>
Cover as a %	Cover as a %
Mean = X_0 = 59.33	Mean = X_0 = 60.93
STD = 8.420	
n = 15	
Woody Plant Density	Woody Plant Density
Mean = X_0 = 70.40	Mean = X_0 = 86.0
STD = 68.417	
n = 15	

For a 90% confidence interval:

$$\frac{"t" (STD)}{n^{1/2}} \leq X_0 \leq \frac{"t" (STD)}{n^{1/2}}$$

where "t" = 1.761 from "t" distribution chart with df = (n-1)

Cover as a %
 $55.50 \leq X_0 \leq 63.16$

Since X_0 of Cover as a % is 60.93 and can be found between 55.50 and 63.16 it can be concluded that the Mine Site and the Reference Area are equal with 90% confidence.

Woody Plant Density
 $39.29 \leq X_0 \leq 101.51$

Since X_0 of Woody Plant Density is 86.0 and can be found between 39.29 and 101.51 it can be concluded that the Mine Site and the Reference Area are equal with 90% confidence.

